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Integrated and coordinated implementation of and follow-up to the outcomes of the major United Nations conferences and summits in the economic, social and related fields

Sustainable development

Follow-up to the outcome of the Millennium Summit

Overview of United Nations activities in relation to climate change

Report of the Secretary-General

1. The present report has been prepared in pursuance of General Assembly resolution 62/8 of 19 November 2007, in which the Assembly requested the Secretary-General to submit, by 25 January 2008, a comprehensive report providing an overview of the activities of the United Nations system in relation to climate change.

2. Unequivocal and authoritative scientific evidence, recent climate events and the resulting increased public attention have elevated climate change high up in the political agenda, facing the international community with a global challenge, which demands an international response. Attention is now focused on the necessity for the multilateral system to mount such a response. An inclusive and coherent approach to climate change would enable the United Nations system to provide support for the negotiations on an international agreement on an effective post-2012 climate change framework, and provide a multisectoral mechanism through which to deliver on future agreements, as well as improve implementation of existing mandates.

3. The Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) (AR4) concludes that our climate system is warming as a result of human activities. Rising greenhouse gas emissions not only threaten our environment, but undermine development and have dramatic and negative consequences for our economic and social well-being, with the most negative effects being felt by the poor. Without a stable climate and without adequate knowledge of future climate change trends, we may not achieve the Millennium Development Goals.

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4. The 24 September 2007 high-level event on climate change convened by the Secretary-General enabled a high-level dialogue and resulted in a strong message from global leaders on their commitment to addressing climate change. The United Nations system was reaffirmed as the appropriate multilateral framework through which the necessary future climate change regime can be established.

5. The United Nations Climate Change Conference held in Bali, Indonesia, under the United Nations Framework Convention on Climate Change,[1] from 3 to 15 December 2007, was a major turning point in efforts to address climate change. The resulting Bali Road Map and Action Plan provide the framework for the achievement of a comprehensive global agreement by the end of 2009. The international community now needs to engage in the processes launched in order to reach an agreement by the stipulated date, so as to enable its entering into force by the end of 2012, when the current commitments under the Kyoto Protocol to the United Nations Framework Convention on Climate Change[2] expire. All Parties, both developed and developing countries, will need to do their part, on the basis of their common but differentiated responsibilities and respective capabilities, in order to achieve this. The Bali process has to develop the basis for action needed after 2012 to effectively adapt to inevitable climate change impacts and to mitigate its causes. A prerequisite for this is putting in place the financial and technology tools that provide the essential catalysts for addressing climate change at the global scale.

6. The Secretary-General has made it a personal priority to work with Member States to ensure that the United Nations maximizes its ability to support this global effort, which is just the kind of global challenge that the United Nations is best suited to address. To deliver on this potential, the United Nations must evaluate its capabilities and understand its potential role and value added. The United Nations needs to be more than merely the sum of its parts. To provide a solid platform and deliver a sound framework, concrete and meaningful cooperation across the United Nations system should be enhanced. The challenge is to develop and implement effectively integrated economic, trade, social and environmental policies on mitigating and adapting to climate change. Deliberations on United Nations system-wide coherence have led to a process of rethinking that could potentially strengthen the capacity of the United Nations to "Deliver as one" in respect of this critical challenge, particularly in supporting the efforts of Member States at the country level.

7. As a first step in achieving this level of coordinated action, the United Nations system has participated in developing an overview of its current activities in response to climate change. As a next step, the United Nations system through the United Nations System Chief Executives Board for Coordination will also undertake the development of an effective framework for greater coherence and coordination of the work of the system, especially in view of additional mandates and tasks expected to result from the negotiations for a post-2012 framework.

8. The first regular session of 2007 (20 April) of the Chief Executives Board, meeting under the chairmanship of the Secretary-General, recognized that many of the challenges the United Nations system currently faces can be met only if the system brings to bear its collective capacities in a coherent and mutually supportive

[1] United Nations, *Treaty Series*, vol. 1771, No. 30822.
[2] FCCC/CP/1997/7/Add.1, decision 1/CP.3, annex.

manner to deliver as one. On behalf of the Chief Executives Board, the Secretary-General requested the Chair of its High-level Committee on Programmes, supported by the Chief Executives Board secretariat, to undertake an assessment of the current role of the United Nations system in addressing climate change. On the basis of this, it would then be possible to provide preliminary recommendations on how the United Nations system acting together can position itself to play a central role in supporting international efforts to address the negative implications of climate change.

9. This report aims to provide a preliminary overview of the current climate change activities of the United Nations and an indication of the way forward. It contains the results, as of now, of extensive consultations within the Chief Executives Board and its High-level Committee on Programmes. Annex I to the report provides an overview of current United Nations system activities on climate change organized by key areas. Annex II contains a more forward-looking paper entitled "Coordinated United Nations system action on climate change". Annex II, in particular, is the outcome of extensive consultations among all relevant United Nations system entities on a common approach. It exemplifies the system's commitment to strengthening and coordinating its work under the four main areas under intergovernmental discussion, namely, adaptation, mitigation, technology and financing, in support of the efforts of Member States to implement existing and future agreements.

10. The United Nations system activities covered by this report are undertaken within the framework of the mandates provided to the United Nations system entities by Member States through the relevant intergovernmental organs. The list of activities, although not exhaustive, is comprehensive enough to demonstrate the level of commitment of, as well as the breadth of activities carried out by, the system. Redoubled efforts are required by all stakeholders — Member States, intergovernmental organizations, the private sector, civil society and individuals around the world — in order to address effectively the challenge of climate change. Partnerships are a key element of mobilizing the necessary resources and the political and economic will to do so. The United Nations system must work with all concerned to bring about the desired results for the common good of humanity.

11. The United Nations system will continue this unprecedented effort to bring to bear the collective strength of all its entities as an integral part of the international community's response to climate change. Further work is being undertaken to develop a coordination structure with key clusters of activity and specific lead agencies. This effort, a "work in progress" requiring sustained attention, will evolve in light of international deliberations in the United Nations Framework Convention on Climate Change and other intergovernmental bodies.

Annex I

Overview of current United Nations system activities on climate change

I. Introduction

The present annex aims to provide an overview of the United Nations system's current climate change activities. It has been compiled on the basis of written submissions from members of the United Nations System Chief Executives Board for Coordination and subsequent consultations in the framework of the Chief Executives Board High-level Committee on Programmes. This does not constitute an attempt to provide an exhaustive inventory of all relevant United Nations activities, or to evaluate their effectiveness. Moreover, as the overview does not account for the financial resources allocated to each activity, it therefore does not attempt to assess the scale of individual and collective activities. Finally, it does not take account of the specialized role of multilateral environmental agreements.

II. Science, assessment, monitoring and early warning: foundations of United Nations work on climate change

A key activity in this area entails the preparation of Special and Assessment Reports and Technical Papers by the Intergovernmental Panel on Climate Change (a joint United Nations Environment Programme (UNEP)/World Meteorological Organization (WMO) body), which involve authoritative analysis of scientific and technical data and information generated by WMO, the United Nations Educational, Scientific and Cultural Organization (UNESCO) and other organizations and provision of relevant policy options. WMO has a mandate to provide world leadership in expertise and international coordination in weather, climate, hydrology, and water resources and related environmental issues and is the United Nations system's authoritative voice on the state and behaviour of the Earth's atmosphere, its interaction with the oceans, the climate process and the resulting distribution of water resources. UNEP has a mandate to keep the world environment situation under review and provides policy advice and early warning on emerging environmental threats and challenges.

The United Nations Framework Convention on Climate Change has established the Subsidiary Body for Scientific and Technological Advice (SBSTA). Scientific information, including that produced by the Intergovernmental Panel on Climate Change, is presented to the Subsidiary Body and discussed through expert groups, workshops and other meetings. There is active cooperation between the Intergovernmental Panel and the Framework Convention, to ensure that the material produced by the Intergovernmental Panel is policy-relevant.

The Intergovernmental Oceanographic Commission (IOC) of UNESCO is the recognized United Nations mechanism for global cooperation in the study of the oceans, a key climate driver. Through the Joint IOC-WMO Technical Commission for Oceanography and Marine Meteorology (JCOMM), it coordinates and manages the implementation of an operational ocean observing system in support of the Global Ocean Observing System (GOOS) and the Global Climate Observing System

(GCOS), and reports to the United Nations Framework Convention on Climate Change.

UNESCO provides the secretariat for the World Water Assessment Programme and leads the production team of over 20 United Nations entities of UN-Water that contribute in an inter-agency collaboration to the *World Water Development Report*, the United Nations system's reference document, that tracks the water-related targets of the Millennium Development Goals. The third edition of the *Report*, endorsed unanimously by UN-Water and scheduled for publication in 2009, will focus on "Climate change and water".

A very broad range of other activities are under way including: the World Climate Research Programme jointly sponsored by WMO, IOC of UNESCO and the International Council for Science (ICSU); Global Environment Outlook providing early warning and assessment of emerging threats (UNEP), and rigorous and unbiased reviews of the state of knowledge on climate processes and impacts (UNESCO); the Global Terrestrial Observing System, the Emergency Prevention System (EMPRES) for Transboundary Animal and Plant Pests and Diseases programme (Food and Agriculture Organization of the United Nations (FAO)); research on the health impacts of climate change (World Health Organization (WHO)); operational research on the impact of climate change on children and support for the local actions of children to improve and monitor community-based environmental processes (United Nations Children's Fund (UNICEF)); vulnerability analysis and monitoring of food (World Food Programme (WFP)); provision of climate and seasonal forecasting in Africa to enable better decision-making in climate-sensitive sectors (for example, farming and water management) in the region (Economic Commission for Africa (ECA)); and support to poor rural communities in building their resilience to climate fluctuations also through emergency and contingency plans (including early warning systems and emergency plans) (International Fund for Agricultural Development (IFAD)).

III. Supporting global, regional and national action on climate change

Brokering negotiations and facilitating collective action

At the international level, the United Nations Framework Convention on Climate Change[a] plays the main role in facilitating negotiated solutions to climate change issues. The Convention secretariat provides logistic and substantive support to the meetings of the Convention and ensures coordination with other processes. Other international environmental, trade and other bodies are also involved in brokering agreements in their respective subject areas.

At the national level, the United Nations Development Programme (UNDP) and other in-country United Nations bodies play a key role in facilitating collective action for managing climate change and sustainable development by supporting national Governments and engaging other national stakeholders (non-governmental organizations, community-based organizations, universities, research institutions and the private sector).

[a] United Nations, *Treaty Series*, vol. 1771, No. 30822.

Integrated policy and activity planning: climate change and sustainable development

Cutting across adaptation, mitigation, technology and financing, the integration of climate, including science and technical advancements, into national development plans is a key tool for facilitating country-led responses to climate change and ensuring complementarity and coherence among environment, development, economic, social, trade and security policies. Existing mechanisms for improved system-wide cooperation include: UN-Energy, UN-Water, UN-OCEANS, the United Nations Development Group (UNDG) and the United Nations Environment Management Group (EMG).

UNDP is working on its key objective and mandate in this area, to lower the risk that climate presents to development, poverty eradication and the achievement of the Millennium Development Goals. Likewise, the World Bank is engaged in supporting pro-poor growth strategies, which take account of climate impacts and risk. ECA within the framework of the African Union Commission-ECA-African Development Bank has played a central role in the preparation of the "Climate for Development in Africa Programme" (ClimDev-Africa), which aims to guide the effective integration of climate information and services into development planning as well as into policies and strategies aimed at achieving the Millennium Development Goals.

UNDP and UNEP are working in collaboration through various programmes including the Climate Change and Development: Adapting by Reducing Vulnerability programme, the Partnership on Climate Change and Poverty, and the Poverty and Environment Centre and are collaborating in implementing the Bali Strategic Plan for Technology Support and Capacity-building[b] to assist countries in integrating climate into national development strategies. United Nations Country Teams integrate climate into United Nations cooperation frameworks and country programmes and facilitate adaptation projects at the country level.

The efforts of the United Nations Industrial Development Organization (UNIDO) are directed at supporting capacity-building for development of greenhouse gas mitigation projects in the industrial sector and direct participation of representatives of industry and its institutions in the activities related to the intergovernmental process on climate change, such as the sessions of the Conference of the Parties to the United Nations Framework Convention on Climate Change and the meetings of the Subsidiary Bodies and associated side events. UNIDO pays particular attention to industrial energy efficiency and the removal of barriers to the development of energy efficiency projects that reduce carbon dioxide (CO_2) emissions and promote greater competitiveness and productivity of industry. UNIDO also advocates the importance of industry as a key sector for adaptation activities and the need for inclusion of adaptation policies and strategies in industrial development policies at the national level. Within the United Nations Framework Convention on Climate Change process, UNIDO contributes to the global dialogue on climate technology transfer by cooperating with key bodies engaged in this process, such as the Expert Group on Technology Transfer (EGTT) and the Climate Technology Initiative (CTI).

[b] UNEP/IEG/IGSP/3/4, annex.

IFAD is strengthening its advocacy for ensuring that there is convergence between the Millennium Development Goals and climate change-related mitigation and adaptation activities. It is also developing policies, strategies and procedures aimed at mainstreaming climate change into its programmes/projects. Moreover, IFAD will adopt a climate-proofing approach to land management for operations in its global environment facility (GEF)/strategic investment programme for Sustainable Land Management in sub-Saharan Africa (SIP) portfolio (the Comoros, Eritrea, Ethiopia, Mauritania, the Niger and Swaziland) in order to pursue an integrated approach to the management of productive rural land, including carbon storage, and adaptation to climate change. IFAD hosts the Global Mechanism of the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa,[c] and is working with this institution in addressing the linkages between land degradation and climate change.

The World Tourism Organization is studying the interrelationship between climate change and tourism with a view to developing a holistic approach to tourism while tackling climate change and contributing to poverty alleviation.

Capacity-building

All too often, political will exists at the national level but the capacity to act is lacking, hindering national efforts. The United Nations system is playing a critical role in addressing this capacity gap.

Under the United Nations Framework Convention on Climate Change, Parties regularly address capacity-building, and have identified national capacity-building priorities that are consolidated in a capacity-building framework for climate change to guide the work of Parties, United Nations entities and intergovernmental organizations. The Convention secretariat has actively participated in activities that directly impact upon successful fulfilment of obligations by developing-country Parties. In particular, the secretariat has supported countries through training and technical support in assessing their vulnerability to climate change, and in producing national climate change plans including adaptation action plans. It also cooperates with other United Nations organizations in their work on capacity-building for the Clean Development Mechanism in Africa through the Nairobi Framework, and is working with agencies in planning and delivering capacity-building for adaptation, in reduction of emissions from deforestation and in other areas.

The World Bank's overarching goal in this regard is to enhance national capacities to cope with climate change. UNEP and UNDP capacity-building activities, which are increasingly planned and conducted jointly, extend to the areas of integrated environmental assessment, early warning and data management, and adaptation planning.

Capacity-building for managing climate change is also needed within the United Nations system. UNDP has carried out staff training sessions on climate change mitigation, carbon finance and adaptation for three audiences in all regions: (a) country office environment staff, (b) country office senior management and (c) regional technical experts, reaching more than 400 staff members by the end of

[c] United Nations, *Treaty Series*, vol. 1954, No. 33480.

2007. UNDP is assisting the United Nations Country Teams and UNDP country offices in screening the United Nations Development Assistance Framework (UNDAF) and UNDP programmes for climate change risks to ensure the effective use of official development assistance (ODA). Training courses are being designed for UNDP staff to help them carry out these screenings and to respond effectively to climate risks on an ongoing basis.

UNESCO co-chairs the capacity-building activities of the Global Earth Observation System of Systems (GEOSS) with the goal of increasing member State capacity to participate in and profit from global remote sensing and in situ observing systems. WMO, UNESCO, the World Bank, ECA, the International Telecommunication Union (ITU), FAO and the International Atomic Energy Agency (IAEA) are all involved in building the scientific and technical capacity in the provision and use of climate information, including in development planning and decision-making. For example, the WMO Climate Information and Prediction Services (CLIPS) deliver to users sector-specific comprehensive information on present and future climate variations. The WMO Regional Climate Outlook Forums (RCOFs) provide an effective mechanism for capacity-building at the regional level, particularly in developing countries.

UNIDO undertakes capacity-building activities for climate change project formulation, economic and financial appraisal and support for the transfer of know-how and technical knowledge for greater industrial energy efficiency, with particular focus on optimization of industrial energy systems. The work of IFAD contributes to building the capacity of farmer/people organizations in rural areas to enhance their access to opportunities and reduce their vulnerability.

The United Nations Conference on Trade and Development (UNCTAD) has developed training material, including by using e-learning courses on the rules of the Clean Development Mechanism, with the aim of increasing the number of Clean Development Mechanism project developers from developing countries and attracting new Clean Development Mechanism investment towards energy-related and other development projects. The World Trade Organization is engaged in the provision of technical assistance and capacity-building with respect to negotiations on the liberalization of environmental goods and services and on various aspects of mutual supportiveness of trade and environment. United Nations entities such as UNEP and UNCTAD are regularly invited to contribute to World Trade Organization technical assistance activities.

Reporting

Reporting under the United Nations Framework Convention on Climate Change includes national communications, national greenhouse gas inventories, and national adaptation programmes of action, among other forums. The Convention secretariat has actively participated in the development of methodological guidelines by the Intergovernmental Panel on Climate Change and has assisted Parties in transforming these guidelines into Convention reporting guidelines. It also coordinates the process of reporting and review of all information reported by Parties to the Convention and the Kyoto Protocol to the United Nations Framework Convention on Climate Change.[d] Based on guidance provided by the two

[d] FCCC/CP/1997/7/Add.1, decision 1/CP.3, annex.

instruments, it has established review procedures to ensure that such information is complete, transparent, accurate, consistent and comparable. It organizes expert reviews relying on internationally renowned experts. The secretariat also administers the most comprehensive greenhouse gas database.

UNEP and UNDP, as implementing agencies of the Global Environment Facility, and WMO play a lead role in supporting the development of these reports/communications from Parties. UNDP has now supported about 200 initial and second national communications, including those of China, India and Brazil. The second phase of the National Communications Support Programme (NCSP) is a six-year initiative, jointly managed by UNDP and UNEP, to provide technical assistance to non-Annex I parties for the preparation of their national communications.

IV. Key sectors of United Nations activity under adaptation, mitigation, technology and financing

A. Adaptation

Integrated planning and assessment

The core United Nations contribution to adaptation currently lies in the development of integrated national development plans, including climate screening of national strategies, country-level vulnerability and adaptation assessments, and climate screening (the Global Environment Facility (GEF) portfolio).

UNDP has developed 20 adaptation initiatives (involving 46 countries, including countries in Africa, Asia and the Pacific, Latin America and the Caribbean, Eastern Europe and Central Asia, and Arab States) worth US$ 160 million, about two thirds of which is co-financing and one third is GEF funding. Additional projects, totalling US$ 50 million, have been prepared for additional resources that may become available. In response to country priorities, the UNDP adaptation projects target the following thematic areas: agriculture and food security, water resources and quality, coastal zone development, public health, and climate-related disaster management. In addition, the MDG Achievement Fund supported by the Government of Spain finances collaborative United Nations activities focused on the integration of climate change risks and adaptation into national development and selected subnational programmes, and United Nations programming.

UNESCO, the International Labour Organization (ILO) and IFAD report sector-specific integrated planning activities. The UNESCO Small Island Developing States Programme and its Local and Indigenous Knowledge Systems programme promote local-level observations and understanding of climate change which provide the basis for community-based adaptation measures for vulnerable populations in remote areas such as small islands, high altitudes, wet tropics and the circumpolar North. UNESCO also provides support to States parties to the Convention concerning the Protection of the World Cultural and Natural Heritage of 1972[e] in implementing preventative and corrective measures to combat climate

[e] United Nations, *Treaty Series*, vol. 1037, No. 15511.

change impacts on natural and cultural world heritage, including raising awareness and sharing of knowledge and experience, developing pilot projects, and developing policy on climate change impacts on world heritage.

The Nairobi Work Programme on impacts, vulnerability and adaptation to climate change was launched at the twelfth session of the Conference of the Parties to the United Nations Framework Convention on Climate Change in 2006 in order to assist countries in improving their understanding of climate change impacts and vulnerability and in increasing their ability to make informed decisions on how to adapt successfully. The United Nations Framework Convention on Climate Change secretariat coordinates the programme and has established cooperation with almost 100 United Nations entities and intergovernmental organizations. Projects are being undertaken in this framework by UNDP and UNEP to strengthen the adaptive capacities of developing countries. The World Bank is facilitating pilot projects that incorporate adaptation into standard development projects as well as developing tools with which to screen projects for climate risks. The Economic and Social Commission for Asia and the Pacific (ESCAP) is engaged in the development of the Asia-Pacific regional platform on adaptation to climate change, which in part aims at mainstreaming climate change adaptation in national development planning.

WMO contributes to the Nairobi Work Programme in the thematic areas of impacts and vulnerability and adaptation planning, measures and actions. WMO has a leading role in five of nine work areas: methods and tools, data and observation, climate modelling, scenarios and downscaling, climate-related risk, and extreme events and research. WFP is exploring the feasibility of using financial instruments to manage risks to livelihoods resulting from drought. For instance, WFP and the World Bank are collaborating on a weather-based insurance pilot project to provide monetary compensation to Ethiopian farmers and protect them against the risk of drought.

National Adaptation Programmes of Action

The United Nations Framework Convention on Climate Change has launched the process of National Adaptation Programmes of Action (NAPAs), which focuses on the identification of priority activities that respond to the urgent and immediate adaptation needs of least developed countries. In work related to the National Adaptation Programmes of Action, the Convention secretariat has developed and maintains a database on local coping strategies, and a compendium of methods and tools to evaluate impacts of, and vulnerability and adaptation to, climate change.

A partnership of UNEP and UNDP focuses on mainstreaming climate change concerns into national development strategies through a three-pronged approach of: (a) assisting countries in assessing their vulnerabilities and incorporating adaptation concerns into national policies and investment plans; (b) assisting United Nations country teams in integrating climate risk into formulation of the United Nations Development Assistance Framework; and (c) conducting pilot projects in key affected sectors together with relevant United Nations agencies. A first major initiative of this approach, Climate Change and Development: Adapting by Reducing Vulnerability (CC-DARE), focusing on sub-Saharan Africa, was launched at the thirteenth session of the Conference of the Parties to the United Nations Framework Convention on Climate Change, held in Bali. UNDP is supporting 30 countries in carrying out National Adaptation Programmes of Action, for which

10 follow-up projects are under development to date. Implementing National Adaptation Programme of Action projects is a national priority, and collaboration among United Nations agencies and regional development banks is also being pursued through these projects. UNDP is at various stages of collaboration with UNEP, FAO, the World Bank, the African Development Bank and the Asian Development Bank on projects in five countries.

Energy

A core function of the United Nations is mainstreaming climate change adaptation in the energy development agenda, including through national energy development plans. The World Bank, UNESCO, UNDP, UNEP and IAEA all have programmes of work in this area. UN-Energy is the inter-agency mechanism established to promote system-wide collaboration in the area of energy with a coherent and consistent approach, since there is no single entity in the United Nations system that has primary responsibility for energy.

Water

United Nations bodies (UNEP, UNDP, UNESCO, IAEA) play principally a normative function in the areas of integrating climate into water management programmes and practices. FAO and IFAD work on links between agriculture and water management under climate stress. WMO is developing the methodologies to recognize global climate change models and to study the impacts of climate variability and change on the scale of regional and large river basin water resources. WFP, FAO and UNDP are involved in the implementation of water-related adaptation activities including rainwater harvesting and storage.

The UNICEF water, sanitation and hygiene (WASH) strategy recognizes the need to protect and manage the water environment, and also recognizes that no agency has the resources to tackle this issue alone. The strategy stipulates that all UNICEF WASH programmes should include specific support for community management of local water resources, including rainwater harvesting (for use by households and schools), and groundwater recharge, micro-watershed management and operational research. Where appropriate, these efforts will be supplemented with the increased promotion of solar and wind energy systems. The strategy notes that UNICEF will work closely with partners to ensure that national policies support effective water-quality monitoring and, where necessary, improvement programmes, and that it will use its position as one of the leading agencies in the WASH sector to bring the needs of the sector to the table in water resources management.

UNESCO addresses assessment, development and research in respect of adaptation strategies related to both freshwater and ocean and coastal regions through its lead role in the World Water Assessment Programme and production of the *World Water Development Report*, as mentioned above. Adaptation strategies focus on management of shared transboundary surface- and groundwater systems and coastal strategies for small island developing States.

Agriculture, food and fisheries

IFAD supports local communities in rural areas in adapting to climate change through investments in areas such as: agronomic management; crop management; alternative enterprises and income diversification; and post-harvest systems. IFAD

also supports the adoption of conservation agriculture and research on climate change, agriculture and food security. FAO operates predominantly at the normative level, including through: monitoring (impacts of climate on marine resources, pests, disease and food security), and development of methods and modelling to improve on-farm decision-making, that is to say, livestock and crop choices. WFP undertakes a range of field-based operational activities that impact directly on the resilience and sustainability of food and agriculture prior to, during and following hazardous events, including vulnerability analysis and mapping, needs assessment, food security monitoring (in partnership with FAO) and a range of community-based hunger safety net initiatives. Other activities include the use of vegetation to reduce vulnerability, and land rehabilitation.

IAEA through partnership with FAO is involved in normative activities, policy advice, capacity-building, research and development and operational technical support to (a) reduce vulnerability of agriculture to drought, soil erosion and water scarcity and (b) assess the potential impacts of soil and water conservation measures on food security, land degradation and greenhouse emissions from soils. FAO is involved in the implementation and monitoring of particularly vulnerable production systems, such as pastoral systems in drylands. The WMO Agricultural Meteorology programme is addressing the issues of adaptation to climate change in the agricultural, forestry and fisheries sectors. Most national meteorological and hydrological services are providing climate-related inputs to decision-making in agricultural communities. In collaboration with the Southern Alliance for Indigenous Resources (SAFIRE), the Office of the United Nations High Commissioner for Refugees (UNHCR) is promoting pilot projects for sustainable agriculture in refugee camps located in areas in Chad, Ethiopia, Namibia, the Sudan and Zimbabwe that are facing desertification.

Health

WHO undertakes a range of climate-related activities, aimed at promoting sustainable development while safeguarding health and promoting long-term health benefits, including reducing environmental health risks associated to climate change. WHO is engaging with other agencies to ensure that climate mitigation and adaptation measures promote health benefits. WMO and WHO issued a range of joint guidelines on, for example, climate change and health (with UNEP), air quality in megacities, the UV index, and vegetation fires, and are in the process of developing guidance on the development of warning systems for heat waves and health, and early warning of epidemics of weather- and climate-sensitive diseases in Africa.

UNDP has collaborated with WHO on a $6 million ($22 million including co-financing) public health focused adaptation project involving seven countries for funding by the Global Environment Facility. UNICEF supports WHO and UNEP in the area of children's environmental health. The agencies are working on the development of a joint plan of action to address climate change and health impacts on children.

Human settlements

United Nations system activity in this sector is primarily driven by the United Nations Human Settlements Programme (UN-Habitat) and UNESCO and focuses on

improving the level of understanding of the impact of climate on human settlements. The UNESCO Social and Human Sciences programme has recently begun working to develop knowledge, research and capacity on urban policy, giving consideration to the environmental impact of uncontrolled urbanization of rural and coastal territories due to climate change-related migration and consumption. This programme, in also addressing the issue of climatic refugees, is developing tools to assess the impact of climate change on migration flows and addressing the relevance of migration policies.

UNHCR is planning to look into the issue of environmentally induced displacement from a human rights/protection perspective. Furthermore, UNHCR has initiated preliminary research on the existing literature containing projections of climate change-related population movements in order to ascertain how the climate change issue is being portrayed. Particular attention is given to ensuring that the potential environmental impact is kept at a minimum through site survey and planning, and construction of shelters and other facilities. A number of UNHCR field offices are taking action to tackle the implications of climate change through waste reduction in camps, recycling and composting, and construction of environmentally friendly shelters.

Industry

Industrial activities primarily fall under "Technology" (see below). However, the International Labour Organization (ILO) is actively involved in supporting adaptation through social protection, proactive labour markets and social dialogue as well as undertaking assessments of the impact of climate change on small and medium-sized enterprises. UNIDO promotes greater efforts to address adaptation in industry, especially in respect of its access to key inputs of production, impacts on natural resources and physical assets, industrial location and increased danger of industrial incidents.

Disaster risk reduction

A range of bodies are active in this sector, including the International Strategy for Disaster Reduction and UNDP, UNEP, UNICEF, WMO, WFP, the Office for Outer Space Affairs of the United Nations Secretariat, ITU, FAO and UNESCO, with programmes in disaster, risk and crisis prevention and recovery: IFAD in strengthening the coping strategies of poor rural populations through assistance and rehabilitation programmes and through its work on indigenous people; and the United Nations Office on Drugs and Crime, through its work on links between crime (illegal trafficking in forestry products) and climate change.

Climate change has spurred increased collaboration within UNDP between the Bureau for Crisis Prevention and Recovery and the Environment and Energy Group. Both the Bureau for Crisis Prevention and Recovery and the Environment and Energy Group are assisting countries in managing climate-related risks. The two groups are building a more integrated, comprehensive programme for managing climate change-related disaster risks towards three outcomes: integrating climate change risks into United Nations country programming; integrating climate change risks into national development priorities; and piloting risk management interventions. The specific objective of this cooperation is to develop and demonstrate an integrated UNDP approach to climate risk management. Country-

level demonstration activities are being prioritized with a view to achieving climate risk reduction at broader regional and global levels.

The United Nations Platform for Space-based Information for Disaster Management and Emergency Response, established by the General Assembly in its resolution 61/110 of 14 December 2006, and implemented as a United Nations programme under the Office for Outer Space Affairs of the United Nations Secretariat, aims at providing access to and developing the capacity of all countries to use the various types of space-based information to support the full disaster management cycle.

B. Mitigation

Integrated policy and programme planning

Mitigating climate change requires a multifaceted approach, spanning all areas of policy- and decision-making. Comprehensive national development strategies are a key tool for mitigating climate change, as is the screening of development programmes for climate impacts. Action on mitigation under the United Nations Framework Convention on Climate Change and the Kyoto Protocol requires robust scientific and technical information to determine cost-effective action as well as the impacts of different options. The Convention secretariat has supported discussions on mitigation under the different bodies under the Convention. This includes the consideration of mitigation material by the International Panel on Climate Change under the Subsidiary Body for Scientific and Technological Advice and work on mitigation potential under the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol (AWG), established to develop commitments for the period after 2012. In response to requests by Parties, and often in cooperation with other United Nations entities or intergovernmental organizations, the Convention secretariat has produced several targeted technical papers, organized expert meetings and workshops and continuously liaises with scientific and research organizations on this matter to keep Parties up to date.

Work is already under way by UNEP, UNDP, IFAD, WMO, UNIDO, ESCAP, ITU and IAEA in assisting countries in integrating climate mitigation priorities into national policies and programmes including through the provision of technical capacity-building, use of environmental assessment procedures, promoting "green growth" approaches and climate proofing development. Other organizations reporting activities in this area include IFAD, ILO and UNESCO. The World Bank has developed "climate screening toolkits" to enable projects to be screened for potential climate impacts.

Energy

The World Bank has a vast energy portfolio, as does UNDP. Both portfolios are largely aimed at improving access to energy and promoting pro-poor growth strategies, while mitigating the risk of climate change. UNDP/GEF supports countries in transforming markets in order that they may attract and drive direct investment towards lower-carbon technologies and practices, while focusing on win-win solutions that simultaneously reduce climate change risks and contribute to human development, such as those based on energy efficiency, renewable energy, and sustainable land-use practices. Through GEF, the World Bank, UNDP, and

UNEP have mobilized over $2 billion and leveraged an additional $10 billion in co-financing since 1991 to support climate change projects in developing countries. The objective of these projects is to develop and transform the markets for energy and mobility in developing countries so that they can grow in a sustainable and less carbon-intensive manner. A key contribution of the World Bank to the energy agenda is the Clean Energy Investment Framework, which aims to improve access to energy, promote energy efficiency and renewables and assist in adaptation and vulnerability assessments.

A key emerging issue is bioenergy. UNEP, FAO, IFAD, UNCTAD and UNIDO report activities including assessments on the opportunities and constraints with respect to bioenergy and identifying approaches that raise the market value of bioenergy. The joint work of UNEP, FAO and UNIDO brings together the comparative knowledge capacities of each as regards assessment and integrated analysis tools, sustainable resources from forests and agriculture, and advanced bioenergy fuels, respectively. FAO is undertaking key work in biodigestion of animal waste, and offering synergies between bioenergy production and water and soil pollution prevention. UNEP is conducting a study exploring opportunities and challenges of increased biofuels production as well as related sustainability criteria and certification systems, and the impacts of incentives or subsidies for biofuels. The UNCTAD Biofuels Initiative, launched in 2005, serves as a hub for analysis and discussion in respect of several aspects of the biofuels option, including specific country assessments, effects on food security, trade and investment opportunities, climate change benefits, biofuels certification, and second-generation biofuels technology. Additionally, UNCTAD has explored other mitigation routes in its work on commodity trade via its sustainable commodity initiative. Along the same lines, UNCTAD foresees significant mitigation gains through the potential liberalization of environmental goods and services.

WMO assists, through tailored climate information, in enhancing exploitation of sustainable natural energy sources such as wind and solar energy, biomass and hydraulics. UNIDO is engaged in the promotion of industrial energy efficiency. The work of IAEA is focused on improving understanding of alternative energy strategies including nuclear energy. The work of ITU encompasses energy reduction measures for new technologies.

UNICEF is supporting renewable energy solutions for schools and health centres in many countries as well as promoting renewable energy solutions for household use designed to reduce the health impacts of indoor air pollution on children. Since sufficient firewood is one of the main concerns in camps for refugee/internally displaced persons, UNHCR encourages its beneficiaries to use alternative fuels and fuel-efficient stoves, in order to reduce firewood consumption and related deforestation. Tests have been made using peat moss, rice husks, biogas and solar energy as supplementary energy sources for cooking. More efficient cooking systems are also being encouraged, entailing in particular shared cooking areas and cooking techniques.

Forestry

FAO provides technical support on afforestation and deforestation programmes. UNEP is supporting the development of equitable mechanisms to realize the co-benefits of reducing emissions from deforestation, conserving

biodiversity and ensuring environmental sustainability. The Global Environment Facility, of which the World Bank, UNDP and UNEP are implementing agencies, has recently added a strategic programme on managing land use, land-use change and forestry as a means to protect carbon stocks and reduce greenhouse gas emissions.

Discussions on reducing emissions from deforestation and forest degradation play an important role within the United Nations Framework on Climate Change in light of the significant contributions these emissions make to global greenhouse gas concentrations. As part of the support to negotiations on this topic, the Convention secretariat has produced several technical papers and is currently developing a web platform for channelling relevant scientific technical and policy-related information.

The UNESCO World Network of Biosphere Reserves implements research using the buffer and transition zones of the reserves for innovative combinations of afforestation/reforestation, avoided deforestation, rural energy and infrastructure development and urban planning in order to enhance integrated solutions to reducing biodiversity loss, mitigating climate change and enhancing socio-economic development. In cooperation with UNEP, UNICEF is supporting tree planting campaigns in many countries. WFP is also involved in tree planting as part of reforestation activities. To minimize the scale of deforestation caused by refugees and other displaced persons around the world, UNHCR has supported reforestation projects in a number of countries for a long time. UNHCR is currently supporting a major environmental programme aimed at planting and caring for more than 9 million trees. In addition, UNHCR is carrying out similar reforestation projects in returnee areas.

Transport

The World Bank and UNDP, through the GEF Trust Fund, have provided investment and capacity-building support, respectively, as a means of facilitating sustainable urban transport. UNEP has also provided technical assistance, mainly for bus rapid transit systems. The cumulative GEF portfolio on sustainable transport is currently valued at $170 million, with $2.4 billion in co-financing.

The International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO) are undertaking mitigation measures in their respective transport sectors (aviation and maritime). Energy intensity has improved in the aviation sector by 70 per cent over the past 40 years with an additional 25 per cent improvement expected by 2020. With regard to maritime transport, the IMO Assembly adopted resolution A.963(23) on 5 December 2003, which contains the Organization's policies and practices related to the reduction of greenhouse gas emissions from ships, all of which have since been incorporated in an action plan. The workplan aims at improving the greenhouse gas indexing scheme, considering methodology for CO_2 emission baselines and considering technical, operational and market-based methods for dealing with greenhouse gas emissions. The workplan is progressing in accordance with an agreed timetable and will culminate in 2009, enabling IMO member States to agree on the action to be taken within the first commitment period under the Kyoto Protocol to the United Nations Framework Convention on Climate Change.

The United Nations Human Settlements Programme (UN-Habitat) reports activities aimed at providing technical and policy advice on urban planning,

including transport systems. WFP, through its local purchase policy, reduces emissions from long-haul transport. In addition, WFP is an active member of the Fleet Forum and the Partnership for Clean Fuels and Vehicles which share the common goals of minimizing the carbon footprints of humanitarian organizations. The Universal Postal Union (UPU) is preparing an action plan aimed at postal operators for organizing training in efficient driving, reconfiguring transport routes and adoption of a vehicle replacement policy on the basis of ecological considerations. Such action will be undertaken in cooperation with UNEP. The World Tourism Organization is supporting the adaptation of the tourism sector and infrastructure to climate impacts.

Carbon capture and storage

Carbon capture and storage offer a climate mitigation tool, which is being supported by a number of United Nations bodies. Activities include: biosequestration and conservation (UNESCO); providing advice and technical information on carbon sequestration, conservation and substitution (FAO); and licensing sub-seabed sequestration (IMO). With regard to the issue of sub-seabed sequestration, amendments to include CO_2 sequestration in sub-seabed geological formation in annex I to the 1996 London Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter[f] were adopted in November 2006 and entered into force on 10 February 2007. As sub-seabed geological sequestration of CO_2 would now be subject to licensing, parties also agreed to the development of Specific Guidelines for the Assessment of Carbon Dioxide Streams for Disposal into Sub-seabed Geological Formations, which were adopted in November 2007.

Trade and markets

The World Trade Organization, UNEP and UNCTAD are working individually and collectively to explore the trade/climate change nexus. Current areas of focus include design of trade rules, development of a manual to help countries assess the impacts (including trade) on climate change (UNEP), and investigation of emerging trade and climate investment opportunities in developing countries (UNCTAD).

C. Technology

A number of instruments have been established under the United Nations Framework on Climate Change to foster technology cooperation and enhance the transfer of environmentally sound technologies. The Convention has established an Expert Group on Technology Transfer (EGTT), which provides advice to Parties to facilitate and advance the development and transfer of environmentally friendly technologies. The Convention secretariat supports the activities of the Expert Group and, in conjunction with this Group, it has developed several guidelines and guidebooks on the matter. A part of this material has been focused on financing aspects and another on providing support to technology project developers.

UNDP work on technical assistance for climate mitigation has evolved from supporting technology demonstration projects to promoting market development for

[f] United Nations, *Treaty Series*, vol. 1046, No. 15749.

climate-friendly technologies. It is supporting Technology Needs Assessments in 80 non-Annex I countries of particular relevance to mitigation activities under the United Nations Framework Convention on Climate Change. GEF offers support to the removal of barriers to the dissemination of technology, whereas the World Bank is currently focused on fostering new technologies in partnership with the donor community. UNEP is assessing renewable energy resource potentials as an end to good policymaking and investment decisions.

UNIDO is facilitating the development and dissemination of clean industrial technologies, including end-of-pipe pollution, replacement of greenhouse gas emitting technologies and, through its joint UNIDO-UNEP Cleaner Production Programme, bridging the gap between industrial production and environmental concerns. WMO, WHO, IFAD, FAO and IAEA report sector-specific technology activities in the provision of technology packages, guidance on effective technologies and promoting cooperation. The United Nations Programme on Space Applications is implemented by the Office for Outer Space Affairs of the United Nations Secretariat and has included climate change as one of the topics in its technical programme of regular activities, which focuses on integrated space technology applications for natural resources management and environmental monitoring. The programme frequently addresses issues related to climate change, such as the use of space technology and its applications for addressing mitigation and adaptation strategies. The World Tourism Organization disseminates and transfers the latest technologies applicable to tourism transport and establishments to developing countries.

The World Intellectual Property Organization (WIPO) is undertaking a programme on Patent-Based Technology Analysis (Patent Landscapes): Alternative Energy Technologies, which assists analysts in forecasting the direction of technology change, helps predict success or failure of new technologies, and helps identify potential areas for research and development. Studies are being commissioned to develop a patent-based technology analysis in energy technologies, such as oil, gas, coal and nuclear energy, alternative energy technologies, renewables, covering solar, wind, hydro, biomass, tidal, wave and geothermal energy, hydrogen fuel cells, carbon capture and storage, energy efficiency and energy conservation.

D. Financing

The United Nations Framework Convention on Climate Change has established a financial mechanism to assist developing-country Parties in the implementation of their commitments. The Convention secretariat supports the provision of guidance by Parties to the financial mechanism. In 2007, the secretariat undertook a major project to assess the financial and investment flows needed for an appropriate response to climate change. This study involved work of more than 30 renowned international experts on adaptation and mitigation, and involved collaboration with several United Nations entities and intergovernmental organizations (including the World Bank, UNDP and the Organization for Economic Cooperation and Development (OECD)) and multinational, regional and national banks and financial corporations.

The Global Environment Facility serves as the operating entity of the financial mechanism for the United Nations Framework Convention on Climate Change and has focused its attention on supporting win-win mitigation activities in developing countries and countries with economies in transition. Between 1992 and 2007, the Facility allocated in excess of $3.3 billion to climate projects and further co-financed in excess of $14 billion. The targeted amount of funding from the fourth replenishment is $990 million for the period from 2006 to 2010. The Facility is obliged to finance the preparation of national communications to the United Nations Framework Convention on Climate Change from non-Annex I parties.

UNDP has been active on the climate change scene since the early 1980s and most actively since the early 1990s when it became a founding member of the Global Environment Facility and one of the principal implementing agencies. In the past 15 years, UNDP has mobilized approximately $3 billion to fund over 400 large-scale and 1,000 small-scale energy- and climate-related projects, mainly through the Global Environment Facility, and has leveraged co-financing of four times that amount. Close to $94 million has been allocated to inter-agency initiatives to strengthen the adaptation capacity of developing countries, as part of the first batch of projects approved under the UNDP MDG Achievement Fund supported by the Government of Spain. Further, as a Global Environment Facility implementing agency, UNDP expects to mobilize an average of $300 million per year for climate mitigation activities between 2008 and 2011.

The UNDP four-year strategy includes capacity development activities for countries aimed at identifying and implementing the right policy instruments which can, in turn, increase the flows of direct investment to climate-friendly technologies and to climate-resilient investment practices. It also includes a goal to foster the transition of developing countries towards lower-carbon development paths. Its key strategy for delivering on this goal is leveraging Global Environment Facility and official development assistance (ODA) financing to remove barriers to direct investment in clean energy technologies and, subsequently, leveraging the carbon market so as to increase the profitability of investment in such technologies. Additionally, a main component of its adaptation strategy is helping countries gain access to new funding sources in order to identify, pilot and share innovative coping strategies.

IFAD, being an executing agency of the Global Environment Facility, plans to assist developing countries in accessing Facility grants for adaptation. The Fund is already working on the implementation of agriculture-related adaptation projects in least developed countries identified in their National Adaptation Programmes of Action, to be financed under the LDC Fund (operated by the Global Environment Facility). In the light of the experience of IFAD on land degradation, the inclusion of land use, land-use change and forestry within the Global Environment Facility climate change focal area widens the organization's comparative advantage in the field of climate change.

A key activity of the World Bank is the Clean Energy Investment Framework aimed at increasing energy access in sub-Saharan Africa; supporting transition to a low-carbon economy; and supporting adaptation to climate change. The Bank continues to provide significant levels of financing for energy and climate programmes (for example, $668 million in lending for renewable energy and energy efficiency projects) and is engaged in:

- Providing experience in methodological, technical and investment work to clarify how market mechanisms can benefit its clients; developing national policies to identify potential investment for possible future international cooperation; evaluating options for reducing greenhouse gas emissions through sectoral planning; and upstream work in investment planning to identify options for mitigating the negative local, regional and global environmental impacts of energy development.
- Catalysing investment in greenhouse gas mitigation when this is financially and environmentally beneficial.
- Coordinating with regional development banks on a range of initiatives such as the Sustainable Energy and Climate Change Initiative; and biofuels development.
- Carbon finance: $2 billion currently under the World Bank.
- New Global Partnership Carbon Fund for post-2012 continuity.
- Avoided Deforestation Facility.

The International Monetary Fund (IMF) is focusing its work in the area of climate change on the macroeconomic, fiscal, and financial market implications. An appendix in the *World Economic Outlook* — the flagship publication of the Fund — will provide an overview of these issues, and an analysis in greater depth, which will also explore the consequent policy implications. This is planned for inclusion in the *Outlook* of spring 2008. A separate paper on the fiscal implications of climate change is being prepared for discussion by the IMF Executive Board. The Fund is also taking a strong interest in issues associated with biofuels.

Clean Development Mechanism

The Clean Development Mechanism, established under the Kyoto Protocol to enhance sustainable development in developing countries and to assist industrialized countries in meeting their emission reduction commitments, is one instrument for supporting low-carbon investments in developing countries and is growing in application. In this regard, a number of United Nations activities have been reported in support of the implementation of the Clean Development Mechanism. These include:

- United Nations Framework Convention on Climate Change secretariat: Provision of process management and substantive support to the CDM Executive Board in its activities relating to the designation of operational entities, approval of methodologies, registration of projects, and issuance of Certified Emission Reductions (CERs), among others. The secretariat is also acting as a catalyst and facilitator for the Nairobi Framework, which has the objective of helping developing countries to improve their participation in the Clean Development Mechanism. Finally, the Convention secretariat has developed the "CDM Bazaar", in collaboration with UNEP (Risoe Centre on Energy, Climate and Sustainable Development), to facilitate exchange of information among buyers, sellers and service providers engaged in the Clean Development Mechanism.
- IAEA: Building capacity in the field of energy-environment planning and modelling mitigation of climate change (including the Kyoto mechanisms).

- UNEP: Developing institutional and human capacities, as well as the enabling business and regulatory frameworks required to formulate and implement Clean Development Mechanism projects.
- UNEP/UNDP: Joint workplan on the Clean Development Mechanism in Africa aimed at technical assistance, capacity-building and project development. The UNDP-UNEP Partnership on Climate Change aims to have in place by 2008 an integrated, donor-supported multi-region Clean Development Mechanism capacity development programme, whose focus will be on identifying the needs of each country in the context of three stages: (a) establishing efficient host-country procedures for Clean Development Mechanism review and approval; (b) canvassing carbon finance opportunities for key sectors and industries from a sustainable development perspective and removing policy barriers; (c) offering project management services to industrial project developers in order to start operation of the market for carbon projects with high development impact, and exiting when the market is developed.
- UNCTAD: Providing training material on rules of the Clean Development Mechanism.
- UNIDO: Capacity-building for development of Clean Development Mechanism projects and assessment of industrial project opportunities; and promotion of access to investment in energy-efficient technologies.
- ILO: Introduction of social criteria and consultation for Clean Development Mechanism transfers.
- ECA: Studying the inclusion of Clean Development Mechanism issues (for example, renewables/energy efficiency) for inclusion in ClimDev-Africa with the aim of assisting African countries in attracting greater foreign direct investment (FDI).
- ESCAP: Development of Clean Development Mechanism guidelines for local government.

Carbon market

United Nations activities in relation to the carbon market currently include:

- Global Environment Facility: Removal of barriers to enable smooth operation of markets for technology, provision of risk guarantees to assist carbon finance projects in moving ahead, filing of carbon credits.
- UNEP and United Nations Framework Convention on Climate Change: Development of an online Clean Development Mechanism Bazaar.
- UNDP: Supporting environmental commodity markets aimed at increasing developing-country access to the carbon market. To date, UNDP has implemented Clean Development Mechanism/Joint Implementation capacity development activities in more than 20 countries and has also recently established the MDG Carbon Facility, which aims to scale up development benefits, particularly in those countries that have yet to gain from the Clean Development Mechanism. According to a recent report from the United Nations Framework Convention on Climate Change, the Clean Development Mechanism could leverage between $15 billion and $100 billion per year in

additional resources to promote sustainable development in developing countries by 2030.

- UNCTAD: Assistance in formulation of national Clean Development Mechanism Investor's Guides to enable developing-country companies to take advantage of and participate in emerging carbon markets.

Private sector partnerships

The partnership of UNEP with the financial sector under the Finance Initiative, which involves over 160 private entities, aims to increase this sector's awareness of climate change challenges, and catalyse its proactive engagement in climate change mitigation and adaptation efforts. UNDP, the United Nations Global Compact and other United Nations entities and initiatives also aim at further involving the private sector.

E. Cross-cutting sectors

Education

UNESCO, as the lead United Nations agency for the United Nations Decade of Education for Sustainable Development, has an overarching goal of increasing public awareness of, education on, and universal access to information and knowledge designed to promote social actions for mitigating the causes of climate change and adapting to its impacts. The UNESCO environmental ethics programme carries out education and public awareness activities on the ethical dimensions of environmental change in order to develop and implement legitimate and effective policies. It includes activities to determine how to assess the needs and rights of future generations, and how to determine what is worth protecting, and at what cost or with what consequences.

UNICEF is developing Environmental Education Resource Packs for Child-friendly Schools in cooperation with UNEP. They are designed to support promotion of renewable energy and sustainable energy solutions to schools and communities while integrating a community-activism, youth empowerment component to the programme. This will be part of the child-friendly school package and will be uniquely geared to the needs of each country, and implemented within national education and environment frameworks and guidelines.

Advocacy and awareness-raising

The Secretary-General has made it a top priority of his tenure to raise awareness at the highest level of the potential impacts of climate change and the necessity for taking urgent action. While political buy-in is fundamental to making strides towards tackling climate change, individual action undertaken by more informed citizens is fundamental as well.

As part of its activities to support implementation of article 6 of the United Nations Framework Convention on Climate Change, the Convention secretariat has organized several workshops to assess needs, identify priorities, share experiences and exchange information on public awareness. It has also developed an information network clearing house (CC:iNet). Finally, the Convention secretariat is developing a strategy to mobilize United Nations agencies to provide technical and/or financial

support and to promote partnerships with other organizations. UNEP has joined this effort as an active partner in support of the New Delhi work programme; discussions on possible cooperation with the Convention on Biological Diversity, UNESCO and UNICEF are under way.

UNESCO works with national and community broadcasters on enhancing media capacities and access to information about climate change. UNEP, WMO, WHO, ITU, FAO and IAEA also report activities in this sector. For example, UNEP conducts a broad range of outreach and awareness-raising activities including awareness campaigns in developing countries, and outreach to youth and journalists, through working with local authorities.

The UNDP *Human Development Report 2007-2008*[g] explores linkages between climate change and human development. Building on the 2007 *Report*, UNDP country offices are planning national human development reports, some of which will focus on climate change impacts on economic and human development and national energy planning.

Formal and non-formal environmental education and awareness-raising projects are also incorporated in many UNHCR programmes. UNHCR is supporting national and camp-specific training programmes on sound environmental management in a number of countries for Government counterparts, implementing partners, displaced people and UNHCR staff. The World Tourism Organization is involved in research and dissemination of knowledge on the interrelationship between climate change and the tourism sector.

[g] Basingstoke, United Kingdom, Palgrave Macmillan, 2007.

Annex II

United Nations System Chief Executives Board for Coordination: coordinated United Nations system action on climate change

I. Introduction

Increasing evidence of climate change and its related economic, social and environmental implications, and its potentially irreversible nature, confronts the international community with one of its most complex and serious challenges. Climate change will impact all, but most severely the poor and vulnerable. The response to climate change has therefore to be rooted in sustainable development and equity, recognizing the vulnerability and resilience of poor people, the need for economic growth and poverty alleviation, and a comprehensive approach to sustainable development with its economic, social and environmental pillars.

Under the leadership of the Secretary-General of the United Nations, the United Nations System Chief Executives Board for Coordination has initiated a process of aligning its strengths so as to achieve a coordinated approach to climate change. The objective is to support the process for an international agreement within the United Nations Framework Convention on Climate Change,[a] as well as to support in a coordinated way the efforts of Member States at national, regional and global levels in tackling the multifaceted challenge presented by climate change. The United Nations system must bring to bear, in a way perhaps never achieved before, the collective strengths of all its entities as an integral part of the international community's response to that challenge.

The high-level event on climate change, convened by the Secretary-General on 24 September 2007 to galvanize political consensus, saw the unequivocal commitment of world leaders to concerted action. They agreed that the United Nations provides the appropriate multilateral framework for action and that the only forum in which international action can be agreed is the United Nations Framework Convention on Climate Change. The Fourth Assessment Report of the Intergovernmental Panel on Climate Change confirmed that anthropogenic greenhouse gas emissions are having significant and negative impacts on climate change, emphasized the dangers of rising global mean temperatures, and provided an assessment of the means and costs of combating climate change. Action to mitigate and adapt to climate change must begin immediately.

The present document prepared by the Chief Executives Board, represents a first stage in defining key areas of action and an effective coordination structure for the United Nations system. It highlights its critical role in the areas of science, assessment, monitoring and early warning as a basis for informed action. It articulates its contribution in supporting global, regional and national action within the four key areas of ongoing negotiation within the United Nations Framework Convention on Climate Change: mitigation, adaptation, technology and finance. The document also addresses key sectors for United Nations system action. It finally outlines the United Nations system's process of establishing climate-neutrality in its own work.

[a] United Nations, *Treaty Series*, vol. 1771, No. 30822.

The document is still a "work in progress", which will evolve in light of international deliberations, particularly in the United Nations Framework Convention on Climate Change, but also in other intergovernmental bodies. Further discussions within the Chief Executives Board will determine a coordination structure with key clusters of activity and specific lead agencies. An illustrative matrix, providing an indicative list of areas of potential United Nations system support to the implementation of climate change negotiation results, is attached. This too will evolve to take account of emerging issues that require inter-institutional cooperation.

II. Science, assessment, monitoring and early warning: foundations of the work of the United Nations on climate change

The response to climate change must be based on comprehensive analysis and assessment of reliable scientific data, and must be continuously informed by monitoring of data, trends and new insights. Greater understanding of the scientific foundations of emerging issues and threats, and their social and economic impacts, will require increased investment of effort.

Creating, maintaining and refining the knowledge base on climate change have been a central role of key United Nations entities, which provide sound and unbiased scientific and technical information to enable evidence-based policymaking. In the area of climate change, this has been the path-breaking work in particular of the Intergovernmental Panel on Climate Change. Global weather and climate prediction systems are a unique resource, which require continuous involvement by member States.

The capacity of countries to monitor climate change and utilize climate predictions is crucial in assessing effective mitigation and adaptation strategies, as well as in developing early warning systems on extreme climate events and hazards. Increased investment in scientific research, to improve climate prediction, respond to emerging issues, narrow uncertainties and have more precise quantitative information at regional and local levels, is required. Early warning systems help identify the occurrence and reduce the impact of disasters.

In order to strengthen and operationalize the knowledge base on climate change, the United Nations system can contribute in the following ways:

- Develop global and regional networks of scientific data and information providers, with a central platform, to strengthen capacities, improve synergies, and support collaboration
- Support the periodic assessment by the Intergovernmental Panel on Climate Change of scientific, technical and socio-economic information, and its presentation to the international community
- Develop tools to assess climate change vulnerability and impact, including impacts of extreme events
- Strengthen national capacities to monitor, predict and evaluate climate impacts, and to better utilize information for response planning and disaster

risk reduction, including analysis of population dynamics and rapid urbanization

- Strengthen the links between science and policy by improving the accessibility of information, that is to say, improve the national relevance of information and hold consultations between scientists and policymakers
- Support the framework agreement to ensure that satellites and terrestrial radars can perform data gathering and monitoring with respect to climate.

III. Supporting global, regional and national action on climate change

The current intergovernmental negotiations under the United Nations Framework Convention on Climate Change revolve around four key areas: adaptation, mitigation, technology and finance, where adaptation and mitigation are goals, and financing and technology are means, for achieving those goals. The Convention is governed by member States, and served by a Secretariat, which also channels inputs from the rest of the United Nations system in response to the intergovernmental negotiations.

To deliver on the growing expectations of the international community, the United Nations system must draw on its strengths: providing a neutral forum for brokering negotiations; establishing trust and galvanizing high-level political support; and securing participation, engagement and ownership of a broad constituency of stakeholders. Each United Nations entity has a role in reinforcing this collective effort, in supporting member States, and in building momentum for future agreement within the Convention.

At the national level, the United Nations system possesses analytical and operational capacities to support countries as they determine their national priorities, and their strategies and policies for mitigation and adaptation, as well as their sector policy options for integrated sustainable development. Coordination of the United Nations system at the national level will become all the more important to ensure effective and coherent support. Current efforts at strengthening the United Nations system's ability to deliver as one are therefore critical also in respect of facing the challenge of climate change.

A. Adaptation

Observable trends related to climate change are already indicating negative impacts on countries across the world. In particular, the least developed countries and the small island developing States are bearing the brunt of increased climate variability and unpredictable and severe weather events. While the political focus continues to be on achieving international agreement on mitigation measures, the adaptation agenda has become critical.

The importance of adaptation was emphasized by world leaders at the 24 September 2007 high-level event, and a sense of solidarity was expressed with those who are most vulnerable to climate change. The negative impacts on progress in meeting national priorities, particularly those relating to the Millennium

Development Goals, were recognized. There was also a clear recognition that development and adaptation efforts must be complementary, allowing countries to pursue strategies for sustainable economic growth and the enhancement of living standards.

The high-level event called for better national and international planning for sustainable development supported by capacity-building and additional funding. National Adaptation Programmes of Action were highlighted as potentially important in addressing long-term adaptation needs in addition to immediate ones. Leaders also called for additional funding to be made available through mechanisms such as the Adaptation Fund.

The links among disaster risk reduction, climate change and development opportunities were underscored. Leaders highlighted the need to reduce disaster risk and increase the resilience of communities with respect to extreme weather phenomena, including through systematic planning and capacity-building.

The challenge of climate change is unlikely to be gender-neutral, as it increases the risk to the most vulnerable and less empowered social groups. In the formulation of global and national approaches, as well as in the strategic responses to specific sectors, gender awareness, substantive analysis and inclusive engagement will be necessary.

The United Nations system has the capacity to support developing countries in mainstreaming adaptation to climate change within integrated national policies, sector-specific strategies and investment plans, for both the short and longer terms. The design of appropriate macroeconomic policy frameworks and fiscal instruments will need to address climate change objectives. A long-term strategy will also entail adjusting to new patterns of production, consumption and employment.

The United Nations system can contribute in the following ways:

- Promote and support the development of broad-based national strategies on adaptation to address both short- and long-term needs, including legislation, policy decisions and operational programmes in sectors
- Assist countries in socio-economic cost-benefit analysis, the climate-proofing of investments, and spatial planning
- Strengthen national capacities to improve integrated policymaking and effective early warning systems, based on improved vulnerability analysis with respect to both natural disasters and other climate risks
- Collect, systematize, analyse and disseminate good practices and knowledge, based on experience and lessons learned, including from National Adaptation Programmes of Action and pilot implementation projects
- Build resilience at the local level by promoting autonomous adaptation capacity and mainstreaming community-based adaptation
- Enhance regional cooperation on adaptation
- Develop policies designed to ease transitions in labour markets and to seize opportunities for generating new and sustainable sources of employment, and to build capacity of enterprises, trade unions and Governments to anticipate

changes in employment and adopt an efficient and equitable process of adaptation

- Support countries in dealing with specifically vulnerable sectors, such as tourism, recognizing that a holistic approach is critical to poverty alleviation, conservation and gender equality in many countries
- Build capacity to protect and sustainably manage the biodiversity and ecosystem services that are required for maintaining resilience with respect to climate change and extreme weather events. and the maintenance of critical genetic resources
- Build capacity among decision makers to better utilize demographic data and information in sustainable development planning.

B. Mitigation

Many leaders attending the high-level event referred to specific goals for mitigation, in particular the need to halve emissions by 2050 and to limit global mean temperature increase to 2° C. Several leaders of industrialized countries expressed their willingness to undertake deeper emissions reductions and several leaders of developing countries also acknowledged the need to take enhanced action to control emissions in a new legal framework that would be equitable and consistent with the principle of common but differentiated responsibilities.

The challenge of mitigation can be met by a portfolio of technologies; some of these are available and others need to be developed. A wide variety of national policies and instruments are available to Governments, including market-based instruments. At the international level, instruments like emissions trading and the Clean Development Mechanism are already providing incentives for investments in mitigation. The main challenge is to substantially reduce emissions in industrialized countries and to address the rapid growth of emissions in emerging economies by stimulating cleaner development choices while promoting sustainable development and poverty eradication. While many developing economies are already developing and implementing national mitigation strategies, such efforts can be significantly expanded if appropriate incentives are provided.

The United Nations system has the capacity to support developing countries in mainstreaming integrated policies and plans on mitigation that are in line with their development goals and do not compromise economic growth.

The United Nations system can contribute in the following ways:

- Assist developing countries in the identification and implementation of national mitigation strategies that limit the growth of or reduce greenhouse gas emissions, while promoting local sustainable development and cleaner economic growth
- Support the integration of such mitigation policies in national development strategies, focusing on energy, construction, agriculture, transportation, industry, forestry and land management
- Assess, illustrate and disseminate collateral benefits of mitigation activities

- Support developing countries in the assessment of their mitigation potential and in measuring their efforts to reduce greenhouse gases (including the compilation and reporting of national greenhouse gas inventories)
- Promote an enabling regulatory environment for mitigation programmes
- Scale up the delivery of carbon finance through strategic choices that help catalyse a change in the way greenhouse gas mitigation is achieved in developing countries and integrated into development plans and transformed investment patterns.

C. Technology

Leaders at the high-level event emphasized the essential role of clean technologies and appropriate adaptation technologies in the context of sustainable development. It was agreed that while technological solutions exist, effective policy frameworks and cooperation instruments are needed to accelerate the deployment and diffusion of these solutions, and that current mechanisms for technology transfer and cooperation will need to be scaled up.

In particular, international cooperation on energy is needed to assist developing countries in meeting their objectives while moving in the direction of low carbon, renewable energy and cleaner fossil fuel technologies. Here, the United Nations has a role to play both in strengthening research, innovation and skills development, and in diffusion, dissemination and adoption of low-carbon technologies.

The United Nations system can contribute in the following ways:

- Develop effective policy frameworks to accelerate the transfer, deployment and dissemination of existing and new technological solutions
- Promote the creation of bilateral, multilateral and private-public partnerships on technology research and development
- Promote sustained and joint efforts between government and the private sector, including the financial sector, to promote the market for new technologies
- Provide technical support to developing countries in conducting and improving their technology needs assessments and in transforming them into bankable technology transfer projects that meet the standards of potential financiers
- Develop international energy management standards to increase the efficient use of existing and future technologies in industry and other sectors.

D. Finance

Global investments in the magnitude of from 15 trillion to 20 trillion United States dollars may be required over the next 20-25 years to place the world on a markedly different and sustainable energy trajectory. If investment choices are based on solid economic rationale and sound scientific evidence, valuing true costs, they can unlock huge change potential. The high-level event stressed the need to provide developing countries with additional resources for investment and capacity-building. While the bulk of investment will come from government and the private sector, the United Nations system can support countries to make choices based on

sound scientific and technical criteria. It will become essential to coordinate access and utilize available resources, as the proliferation of funding mechanisms can lead to fragmentation and loss of coherence and effectiveness.

Related to finance and investment choices, trade is one of the enabling factors that come into play in the complex process of tackling climate change. The creation of an open global market in environmental technologies is essential to efforts to deal with climate vulnerability and adaptation. Trade liberalization may help adaptation to climate change. In particular, the successful conclusion of the environmental goods and services negotiations in the current Doha Round can increase access to adaptation and mitigation technologies and increase countries' ability to invest in such technologies. In addition, existing World Trade Organization rules on trade in financial services are relevant to the operationalization of any market-based system for trading emissions credits or licences.

The United Nations system can contribute in the following ways:

- Support national Governments in the formulation of policies to increase investment and financial flows in mitigation and adaptation
- Support the development of national capacities to access and utilize resources to implement an appropriate mix of policy instruments to achieve sustainable growth
- Support efforts to reinforce international financial mechanisms, including the Global Environment Facility
- Strengthen actions aimed at targeting public funding more effectively, encouraging more effective engagement of the private sector and strengthening work to address investment flows and financing initiatives
- Support efforts to enhance the tools of the carbon market, including the broadened application of the Clean Development Mechanism, and to enhance action under the Nairobi Framework to support developing-country participation in the Clean Development Mechanism
- Support the operationalization of the Adaptation Fund
- Support commitments to trade liberalization and investment in goods, services and technologies that contribute to mitigation efforts
- Increase efforts to ensure that energy efficiency measures have better access to finance, including carbon finance.

IV. Coordinating the United Nations system's work in key sectors

The present section provides an initial outline of the means by which the United Nations system can, in seeking to effectively respond as one to the challenges of climate change, coordinate its substantive work in different sectors and some cross-cutting areas. The sector engagements need to be linked to the key areas addressed in the negotiations, namely, adaptation, mitigation, technology and finance, and related to the continued work on science, assessment and monitoring.

These objectives have been conceptualized in the attached indicative matrix, with the identified sectors being relevant to the key areas in differing degrees.

United Nations system coordination at the sector or thematic level can build on already established groupings, such as UN-Energy, UN-Water, UN-OCEANS, the secretariat of the International Strategy for Disaster Reduction and the United Nations Communications Group. In some areas, there is clear leadership accountability following the institutional mandate of a United Nations entity or entities, while in others, accountability is more diffuse. The magnitude of the challenge of climate change will require enhanced collaboration within and among sectors, and an effectively coordinated structure to guide action. The United Nations system will continue to develop its response to these needs as the intergovernmental discussions and negotiations evolve.

Energy

Energy is at the heart of the climate mitigation agenda. In the developed world, energy consumption patterns exacerbate the challenge. In the developing world, countries face the challenge of providing 2 billion people with access to modern energy and meeting their overall development objectives. Deeper emission cuts are required by industrialized countries, while greater efforts are required in developing countries to address energy access in a sustainable manner. The United Nations undertakes a range of activities related to both policy and implementation which need to be better aligned to support climate change mitigation as well as access to energy.

The United Nations system can contribute in the following ways:

- Improve national capacities to integrate climate change in developing countries' sustainable energy strategies in order to meet their growing energy needs, particularly through renewable energy, energy efficiency, low-carbon technologies and cleaner fossil fuel technologies
- Utilize the immense potential of cooperation with the private sector, particularly in energy financing and technology
- Improve understanding of transportation systems, taking into account cleaner transportation options (for example the use of shipping)
- Improve energy management in industry by developing standards, product labelling, and certification procedures for both domestic appliances and industrial equipment
- Provide authoritative technical and economic analyses of climate-relevant technologies, including, for example, the experience gained in the phase-out of ozone depleting substances
- Improve access to clean energy for households, schools and health facilities and raise awareness on the linkages between clean energy and child health
- Better utilize the potential of UN-Energy to improve coherence in the United Nations system's work on energy.

Agriculture and fisheries

Agriculture is both a source and a sink for greenhouse gases, as well as both a source and a user of energy. Agriculture is thus a cause, a victim and a potential mitigation mechanism of climate change. It is predicted that climatic fluctuations and extreme weather events will have increasingly negative impacts on agriculture, particularly in developing countries where there are fewer options for adapting. Uncertainties throughout the food chain, over a spectrum ranging from yields to trade dynamics, will be heightened. Water, land, biodiversity and terrestrial ecosystem services will become stressed. This will impact food security and the ability to feed a population approaching 9 billion by 2050.

Also, climate change impact on marine, coastal, estuarine and freshwater ecosystems is likely to affect many of the 200 million people directly or indirectly dependent on fisheries for their livelihoods, through changes in nature, distribution and productivity of aquatic resources. The result is heightened vulnerability of communities with increasing prevalence of natural disasters, such as flooding and cyclones.

If not properly managed, the switch in use of productive land from food to biofuels production risks increasing prices of food crops, aggravating food insecurity, and exacerbating rural poverty and gender inequality.

The United Nations system can contribute in the following ways:

- Strengthen capacities of countries to determine adaptation and mitigation responses in their agriculture, fisheries and forestry sectors, including in sustainable land and water management
- Increase technical support to farmers in developing and implementing alternative agricultural systems
- Improve provision of data and information on the impacts of climate change on agricultural systems, fisheries, rural population and food security, including efforts to improve short-term weather forecasting and medium-term weather projections
- Deepen the understanding of the links among biofuels and food security, land and water use, and biodiversity
- Promote research on drought-resistant and saline-tolerant crops
- Promote research on "second-generation" biofuels generated from cellulose, waste and other materials that minimize competition with land and water use for food production
- Support increased carbon sequestration through restoration of degraded land and through improved agricultural land management
- Develop financial instruments to compensate poor farmers for the environmental services they provide by adopting land-use and forestry practices that reduce carbon emissions.

Water

Climate change will have significant impacts on the hydrologic cycle, affecting both the availability of fresh water and the frequency of floods and droughts. The consequences are far-reaching and are likely to be felt the hardest by the most vulnerable. Changes in water availability and extreme events could undermine development, affect human security and livelihoods, significantly impact agriculture and industry, and act as a push factor in population movements and migration. Water scarcity can also trigger conflict. Adaptation to climate change needs to build on conventional hard and soft interventions and may also require a major shift in planning and designing of water investments.

The United Nations system can contribute in the following ways:

- Increase the understanding of the impacts of climate variability and change on water systems
- Identify the hot spots where climate change and other driving forces are expected to exacerbate water scarcity and extreme events, and help monitor social impacts, facilitate population movement and prevent conflict
- Strengthen integrated water resource management by promoting methodologies for incorporating hydrologic variability and climate change in the design of project, programme and sector-wide investments
- Raise awareness, build capacity and increase resilience of local communities with respect to coping with water stress, increased hydrologic variability and extreme events
- Increase resilience of industry with respect to reduced availability of water resources by promoting the deployment of water-efficient technologies.

Oceans

Ocean-climate coupling regulates and mitigates the exchange of heat, carbon and water within the Earth's systems. The recent Intergovernmental Panel on Climate Change report forecasts rising sea levels and increased storminess, ocean acidity and precipitation which will have significant impacts on coastal flooding, marine food chains, and the water cycle.

The United Nations system can contribute in the following ways:

- Improve the understanding of the impacts of climate change on the ocean heat pump, marine ecology and marine risk forecasting
- Strengthen an integrated network of ocean-climate observations
- Build capacity of local communities to forecast and cope with coastal risk
- Encourage research to fill knowledge gaps for ocean carbon sequestration schemes.

Forestry

Climate change impacts on forests, including forest dieback and forest fires, will exacerbate impacts on dependent food systems, with consequences for the over 400 million people directly depending on forests for food and livelihoods. Deforestation and forest degradation contributes about 20 per cent of global emissions. Reducing deforestation and encouraging afforestation and reforestation therefore offer significant cost-effective solutions to mitigating climate change. They also offer adaptation benefits by increasing the resilience and adaptive capacity of forest ecosystems, as well as significant carbon sequestration potential.

The United Nations system can contribute in the following ways:

- Promote the implementation of the non-legally binding instrument on all types of forests which has developed a comprehensive approach to sustainable forest management, combining national action and international support, and offering environmental, social and economic benefits
- Build the capacity of countries to shape policies and plans aimed at realizing the benefits of halting deforestation and forest degradation and promoting sustainable forest management
- Strengthen incentives to developing countries to stimulate improved sustainable forest management
- Promote forest expansion as an adaptation measure for watershed protection, prevention of soil degradation and rehabilitation of degraded land
- Promote the protection of existing forest, which could become eligible for carbon financing under the new climate regime
- Support community-based reforestation projects and promote awareness among children and young people to impact reforestation efforts at community level
- Help local communities benefit from new international instruments designed to compensate forest holders for global ecosystem services provided
- Promote efforts to simplify Clean Development Mechanism rules for broader integration of community-based afforestation and reforestation projects
- Foster synergies among the Rio Conventions to promote biodiversity, prevent land degradation and promote land rehabilitation
- Explore mechanisms of compensation from the international community to take account of the opportunity costs of alternative land use and the administrative costs of forest protection
- Improve scientific understanding and adoption of standards and methods of assessing carbon change in forests and carbon storage.

Health

Climate change brings major new challenges to health security and will increase the costs and difficulties of disease control. It is therefore essential to empower and equip health institutions and to protect population health from current and projected risks of climate variability and change.

The United Nations system can contribute in the following ways:

- Generate knowledge and evidence for action (for example, definition of an applied research agenda that is targeted specifically at health and climate and the impact on mortality and population)
- Increase research, knowledge and awareness of health consequences of climate change at all levels, including through schools and community outreach activities (through the development of a consistent set of messages)
- Strengthen public-health planning capacities, including through improved monitoring and evaluation of climate and health impacts
- Strengthen health systems to enable them to provide protection from climate-related risks (for example, through promotion of a more forward-looking preventative approach to health protection)
- Integrate health considerations into decisions on climate change in other key sectors (for example, through improved participation of health professionals in key national and international processes).

Transport

Transport consumes a quarter of the world's energy, and accounts for some 25 per cent of total CO_2 emissions, 80 per cent of which can be attributed to road transport. Moreover, local and regional air pollution, congestion in urban areas, land use for transport infrastructure-building and health effects are key problems. With growing demand for mobility in developed and developing countries, these problems will become more and more pressing.

Maritime transport carries over 90 per cent of the world trade in volume, which is vital for the world economy, and remains the most environmentally friendly and energy-efficient mode of transport in specific terms. Therefore, although maritime transport may be a small contributor to climate change, it can also be part of the solution to the problem. In view of the international nature of maritime transport, legislation and mitigation measures should be taken at the global level.

Aviation is a critically important transport mode, moving more than 2.2 billion passengers and 40 per cent of international exports by value. Air traffic demand is growing at a rate of 5-6 per cent per year as a global average, with the fastest growth rates in developing countries and regions, resulting in increasing aggregate amounts of CO_2 emissions. This could cause the aviation share to grow above its current emission levels, estimated at 2 per cent of the global total. Significant improvements in fuel efficiency can be achieved if congestion is eliminated and aircraft fly more direct routes. Work on the development of alternative fuels for aviation shows promise and is continuing apace. New technology in airframes and engines continues to demonstrate significant fuel efficiency.

The United Nations system can contribute in the following ways:

- Support the use of cleaner marine fuel and more efficient marine engines

- Support the use of operational and technical measures, which may include optimal routing design and speed management as well as optimization of the ship's hull, appendices and propeller design and interaction
- Introduce market-based measures, which may include emissions trading
- Strengthen technical cooperation to support developing countries in meeting their trade needs through access to clean transport
- Further develop aviation emissions impact assessment tools and facilitate data access and dissemination
- Further explore possible alternative fuels for aviation and assess their environmental impacts
- Continue to develop and update aircraft engine emissions standards, and medium- and long-term goals
- Promote the use of operational measures that reduce fuel consumption and emissions
- Foster the modernization and optimization of air traffic management systems
- Continue to explore the use of global market-based measures to reduce aviation emissions
- Promote further research on the impact of aviation on the atmosphere
- Facilitate the sharing of information on best practices and voluntary measures to address aviation emissions.

Disaster risk reduction

Climate change is predicted to increase the frequency and intensity of severe weather events (for example, droughts, cyclones and heatwaves). These trends may lead to significant negative impacts on public safety, productive systems and livelihoods and, in some cases, national stability. Disasters disproportionately affect the poor and most vulnerable and can lead to significant movements of population, as well as be drivers for migration, and may also become potential drivers of conflict and instability owing to increased scarcity of natural resources.

The United Nations system can contribute in the following ways:

- Better articulate the relations and synergies between the Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters[b] and climate change and the International Strategy for Disaster Reduction
- Mainstream and strengthen disaster risk reduction in the United Nations system, at both policy and programme levels
- Strengthen national capacities in disaster preparedness, with an emphasis on early warning, vulnerability analysis and mapping and logistics

[b] A/CONF.2006/6 and Corr.1, chap. I, resolution 2.

- Implement the Tampere Convention on the Provision of Telecommunication Resources for Disaster Mitigation and Relief Operations relating to emergency telecommunications for disaster reduction and relief[c]
- Develop a comprehensive approach aimed at reducing vulnerabilities to climate risks by identifying the most critical issues and likely areas of concern (for example, hot-spotting)
- Improve and make accessible existing disaster reduction tools and methods and information on best practices at the national and local levels.

Population and human settlements

The impacts of climate change, the mitigation opportunities and the necessity for adaptation are relevant to all sectors of human settlements. The need to improve the planning of cities and settlements so that they may better cope with climate change has to be recognized in order to prevent loss and destruction of lives and properties and reduce vulnerability, particularly in light of rapid urban growth, especially in densely populated countries. Opportunities for energy saving and emissions reduction in urban areas need to be identified. The multifaceted nature of the relationship between climate and human settlements (over a spectrum ranging from infrastructure, economic stability and natural resources use to large population movements, migration, gender equality and human security) and the complementary needs of increasing resilience and reducing emissions require an integrated approach.

The United Nations system can contribute in the following ways:

- Construct a comprehensive programme of support aimed at reducing urban poverty, through building national and local capacity in integrated urban planning, based on scenarios of future climate change impacts on population movements
- Support local authorities in assessing risks and vulnerabilities to climate change, particularly those in secondary cities in developing countries, which are at the most risk from climate change, develop a strategic plan accordingly
- Develop and disseminate technologies, standards and codes to support resilient and sustainable infrastructure and construction.

Education

For mitigation and adaptation, the role of education, in general, and of education for sustainable development, in particular, is pivotal. The objective is to lay the foundations for an educated population aware of the challenges of sustainable development and climate change. The United Nations Decade of Education for Sustainable Development, 2005-2014, envisages the mobilization of all strata of society and expertise through both formal and non-formal education to further principles, values and behaviour linked to sustainable development and to induce necessary behavioural and attitudinal changes so as to minimize negative

[c] United Nations, *Treaty Series*, vol. 2296, No. 40906.

climate impacts. In this area, the United Nations system can contribute by promoting basic education, reorienting and revising education programmes, developing public understanding and awareness and providing practical training.

The United Nations system can contribute in the following ways:

- Integrate environmental sustainability, including climate change, into national curricula and into lifelong learning, as well as mainstream it in teaching and teacher training
- Develop prototype materials and awareness-raising tools for the benefit of educators, teachers and students worldwide
- Adapt the work of institutions of higher education towards Education for Sustainable Development (ESD) objectives and national science, technology, engineering and innovations systems to respond to the exigencies of the climate change agenda, while increasing local, national, and regional capacities for informed decisions about climate change
- Raise awareness in developing countries that education constitutes a highly effective strategy for supporting long-term sustainable and climate-resilient growth.

Public awareness-raising

Clear expression of public sentiment is a key driver of political will. Informed action by individuals is fundamental to tackling climate change. Both are dependent on citizens' having a good level of understanding and awareness of the causes and effects of climate change as well as of the required response. Engagement with civil society organizations across the world is essential. Consistent with article 6 of the United Nations Framework Convention on Climate Change, the United Nations system can contribute in the following ways:

- Provide a venue for engagement with civil society organizations across the world
- Enhance the role of the media in raising public awareness
- Improve the use of information and communication technologies to facilitate improved access to data and information so as to support timely responses to climate change risks
- Create incentives to encourage the public to undertake climate change mitigation and adaptation measures.

V. Moving towards a climate-neutral United Nations

The United Nations system recognizes the need to explore ways of making the United Nations more climate-friendly and environmentally sustainable, and to develop a climate-neutral approach to its premises and operations. The Secretary-General tasked the Environmental Management Group, under the leadership of the Executive Director of the United Nations Environment Programme (UNEP), to develop approaches on how best to make the United Nations climate-neutral. While

the principles underlying this initiative are widely subscribed to, and while a number of positive signals have been given for financial support from Member States, there is a need for greater precision in defining the practical aspects of its implementation. However, there is agreement that the initiative is both symbolically important and administratively possible, and appropriate steps can make economic sense.

In response, a report by the Environmental Management Group proposed to the Chief Executives Board for Coordination a framework for guiding the work, a strategic approach on how to achieve a climate-neutral United Nations and a commitment from all agencies to implement the initiative. The objective by the end of 2009 was for members of the Chief Executives Board to assess emissions, start to reduce and manage these emissions, and assess the cost and budgetary implications of offsetting emissions from activities that remain. Once the initial assessments have been undertaken, a strategy should be presented to the Chief Executives Board recommending a date by which the whole of the United Nations should become climate-neutral. A small unit in UNEP would be set up as a clearing house to provide support to organizations in managing the processes involved in moving towards climate-neutrality.

The United Nations system through the Chief Executives Board decided to commit to a process that would ensure that the United Nations system moved decisively towards establishing climate-neutrality in its operations worldwide.

The United Nations system further agreed to undertake the following steps:

- Reduce energy consumption at the United Nations Headquarters compound in New York by at least 40 per cent, through an accelerated strategy for the United Nations Headquarters capital master plan, and inviting the private sector to donate its best technology
- Conduct an environmental audit of United Nations Headquarters in New York, covering procurement and renovations, assisted by UNEP
- Calculate emissions from air travel, with the help of approved methodologies
- Lead by example in individual institutions, including through supporting staff association efforts to reduce greenhouse gas emissions, recycle paper and lower paper consumption, and make other changes in offices as far as possible.

VI. The way forward

The international community acknowledges the United Nations as being the multilateral framework for establishing a post-2012 climate regime, and a source of multisectoral and sectoral support. In fulfilling this expectation, the United Nations will need to draw on its strengths to *deliver as one*, providing a neutral negotiating forum, establishing trust and galvanizing high-level political support. Each United Nations entity has a role in supporting the United Nations Framework Convention on Climate Change process based on an agreed approach, and in supporting countries over the short and long term in responding to the challenges of climate change. It will be essential for each body to illustrate the impacts of climate change, in its specific policy area, the relevance of its work to addressing climate change, and the type of support services it can make available.

As a global problem, climate change demands a collective international response. The United Nations commands the ability to support such a response on the basis of a strategic vision, setting out common goals and objectives, assigned roles for United Nations entities and strengthened mechanisms for collaboration. Such a strategy, which should be developed within the Chief Executives Board, would also ensure that future climate programmes of individual agencies in their area of comparative advantage are developed in collaboration within a broader framework and in support of the United Nations Framework Convention on Climate Change process.

Areas of potential United Nations system support to the implementation of climate change negotiation results

(Indicative list)

Negotiating theme/sector	*Adaptation*	*Mitigation*	*Technology*	*Financing*
Support to overall planning and action:				
All United Nations system organizations in their respective fields of activity (*Note*: Mention below of United Nations system entities by their acronym indicates engagement of the entity in the sector under consideration within its respective mandates and programme of work. The list is not exhaustive and does not indicate the kind or level of engagement. Existing coordination mechanisms for each sector are underlined.)	Promote and support the development of broad-based national strategies on adaptation to address both short- and long-term needs, including legislation, policy decisions and operational programmes in sector Assist countries in conducting socio-economic cost-benefit analysis, climate-proofing investments, and spatial planning Strengthen national capacities to improve integrated policy and effective early warning systems Collect, systematize, analyse and disseminate good practices and knowledge, based on experience and lessons learned, including from National Adaptation Programmes of Action	Assist developing countries in the identification and implementation of national mitigation strategies that limit the growth of, or reduce, greenhouse gas emissions while promoting local sustainable development and cleaner economic growth Support the integration of such mitigation policies in national development plans, focusing on energy, construction, agriculture, transportation, industry, forestry, and land management Assess, illustrate and disseminate collateral benefits of mitigation activities Support developing countries in the assessment of their mitigation potential and in measuring their efforts	Develop effective policy frameworks to accelerate the transfer, deployment and dissemination of existing and new technological solutions Promote the creation of bilateral, multilateral and private-public partnerships on technology research and development and provide support to Governments for initiatives on research and development of climate-friendly technologies and in offering incentives to the private sector for participation in them Promote sustained and joint efforts between government and the private sector, including the financial sector, to promote the market for new technologies Provide technical support to developing countries in	Support national Governments in the formulation of policies to increase investment and financial flows in mitigation and adaptation Support the development of national capacities to access and utilize resources needed to implement an appropriate mix of policy instruments for achieving sustainable growth Support efforts to reinforce international financial mechanisms, including the Global Environment Facility Strengthen actions aimed at targeting public funding more effectively, encouraging more effective engagement of the private sector and strengthening work undertaken to address investment flows and financing initiatives

Negotiating theme/sector	*Adaptation*	*Mitigation*	*Technology*	*Financing*
	and pilot implementation projects Build resilience at the local level by promoting autonomous adaptation capacity and mainstreaming community-based adaptation Enhance regional cooperation on adaptation Develop policies to ease transitions in labour markets and to seize opportunities for generating new and sustainable sources of employment, and to build capacity of enterprises, trade unions and Governments to anticipate changes in employment and adopt an efficient and equitable process of adaptation Support countries in dealing with specifically vulnerable sectors, such as tourism, recognizing that a holistic approach is critical to poverty alleviation, conservation and gender equality in many countries	to reduce greenhouse gases (including the compilation and reporting of national greenhouse gas inventories) Promote an enabling regulatory environment for mitigation programmes Scale up the delivery of carbon finance through strategic choices that help catalyse a change in the way in which greenhouse gas mitigation is achieved in developing countries and integrated into development plans and transformed investment patterns Assist developing countries in their efforts to reduce emissions from deforestation and degradation by building their capacity, including developing a methodological and policy framework for the implementation of programmes that reduce emissions from deforestation and degradation	conducting and improving their technology needs assessments and in transforming them into bankable technology transfer projects that meet the standards of potential financiers in order to attract international finance Develop international energy management standards to increase the efficient use of existing and future technologies in industry and other sectors	Support efforts to enhance the tools of the carbon market, including the broadened application of the Clean Development Mechanism, and to enhance action under the Nairobi Framework to support developing-country participation in the Clean Development Mechanism Support the operationalization of the Adaptation Fund Support commitments to trade liberalization and investment in goods, services and technologies that contribute to mitigation efforts Increase efforts to ensure that energy efficiency measures have better access to finance, including carbon finance

Negotiating theme/sector	*Adaptation*	*Mitigation*	*Technology*	*Financing*
	Build capacity to protect and sustainably manage the biodiversity and ecosystem services that are required for maintaining resilience with respect to climate change and extreme weather events, and the maintenance of critical genetic resources **Build capacity among decision makers to better utilize demographic data and information in sustainable development planning**	**Develop and disseminate strategies to address increasing emissions from the transport sector** **Support research on the impacts, in particular on developing countries, of mitigation policies and measures**		
Energy:				
UN-Energy, UNDP, UNEP, UNIDO, Department of Economic and Social Affairs of the United Nations Secretariat, FAO, IFAD, UNCTAD, World Bank Group, GEF, IAEA, United Nations Human Settlements Programme (UN-Habitat), UNICEF	Improve access to clean energy for households, schools and health facilities and raise awareness on the linkages between clean energy and child health	Improve national capacities to integrate climate change in developing countries' sustainable energy strategies in order to meet their growing energy needs, particularly through renewable energy, energy efficiency, low-carbon technologies and cleaner fossil fuel technologies Utilize the immense potential of cooperation with the private sector, particularly in energy financing and technology	Provide authoritative technical and economic analyses of climate-relevant technologies, including, for example, the experience gained in the phase-out of ozone depleting substances	

Negotiating theme/sector	*Adaptation*	*Mitigation*	*Technology*	*Financing*
		Improve understanding of transportation systems, taking into account cleaner transportation options (for example, the use of shipping)		
		Improve energy management in industry by developing standards, product labelling, and certification procedures for both domestic appliances and industrial equipment		
Agriculture and fisheries:				
FAO, IFAD, WFP, World Bank Group, WMO, UNEP, UNIDO, Convention on Biological Diversity, IAEA	Strengthen national capacities to determine adaptation responses in the agriculture and fisheries sectors, including in sustainable land and water management Increase technical support to farmers in developing and implementing alternative agricultural systems Improve data and information provision on the impacts of climate change on agricultural systems, fisheries, rural populations and food security, including through efforts to improve short-term weather forecasting and	Deepen the understanding of the links between biofuels and food security, land and water use, and biodiversity Promote research on "second generation" biofuels generated from cellulose, waste and other materials that minimize competition with land and water use for food production Support increased carbon sequestration through restoration of degraded land and through improved agricultural land management		Develop financial instruments to compensate poor farmers for the environmental services they provide by adopting land-use and forestry practices that reduce carbon emissions

Negotiating theme/sector	*Adaptation*	*Mitigation*	*Technology*	*Financing*
	medium-term weather projections Promote research on drought-resistant and saline-tolerant crops			
Water:				
UN-Water, UNEP, UNDP, UNESCO, WMO, Department of Economic and Social Affairs of the United Nations Secretariat, Office for the Coordination of Humanitarian Affairs of the United Nations Secretariat, FAO, World Bank Group, IFAD, UNIDO, United Nations Human Settlements Programme (UN-Habitat), UNICEF, IAEA, Convention on Biological Diversity	Increase the understanding of the impacts of climate variability and change on water systems Identify the hot spots where climate change and other driving forces are expected to exacerbate water scarcity and extreme events and help monitor social impacts, facilitate population movement and prevent conflict Strengthen integrated water resource management by promoting methodologies for incorporating hydrologic variability and climate change in the design of project, programme and sector-wide investments Raise awareness, build capacity and increase resilience of local communities to cope with water stress, increased		Increase resilience of industry to reduced availability of water resources by promoting the deployment of water-efficient technologies	Increase investment to better understand the impacts of climate variability and change on water systems and implications in terms of investments in the water sector

Negotiating theme/sector	*Adaptation*	*Mitigation*	*Technology*	*Financing*
	hydrologic variability and extreme events			
Oceans:				
UN-Oceans, UNESCO, IMO, WMO, UNEP, IAEA, Department of Economic and Social Affairs, FAO, GEF, Convention on Biological Diversity	Improve the understanding of the impacts of climate change on the ocean heat pump, marine ecology and marine risk forecasting Strengthen an integrated network of ocean-climate observations Build capacity for local communities to forecast and cope with coastal risk	Encourage research to fill knowledge gaps for ocean carbon sequestration schemes		
Forestry:				
Department of Economic and Social Affairs, FAO, UNEP, UNDP, United Nations Framework Convention on Climate Change, World Bank Group, IFAD, United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, Convention on Biological Diversity, regional commissions, WFP	Promote implementation of the non-legally binding instrument on all types of forests, which has developed a comprehensive approach to sustainable forest management, combining national and international support, and offering environmental, social and economic benefits Build the capacity of countries to shape policies and plans aimed at realizing the benefits of halting deforestation and forest degradation and	Strengthen incentives to developing countries to stimulate improved sustainable forest management Support community-based reforestation projects and promote awareness among children and young people to impact reforestation efforts at community level Improve scientific understanding and adoption of standards and methods of assessing carbon change in forests and carbon storage		Promote the protection of existing forest, which could become eligible for carbon financing under the new climate regime Explore mechanisms of compensation from the international community to take account of the opportunity costs of alternative land use and the administrative costs of forest protection Help local communities to benefit from new international instruments to compensate forest holders for global

Negotiating theme/sector	*Adaptation*	*Mitigation*	*Technology*	*Financing*
	promoting sustainable forest management			ecosystem services provided
	Promote forest expansion as an adaptation measure for watershed protection, prevention of soil degradation and rehabilitate degraded land			Promote efforts to simplify Clean Development Mechanism rules for broader integration of community-based afforestation and reforestation projects
	Promote synergies among the Rio Conventions to promote biodiversity, prevent land degradation and promote land rehabilitation			
Health:				
WHO, UNICEF, UNFPA, World Bank Group, UNDP, UNEP, UNESCO, IAEA, Convention on Biological Diversity	Generate knowledge and evidence for action (for example, definition of an applied research agenda that is targeted specifically at health, climate and impact on mortality and population)			
	Increase research, knowledge and awareness of health consequences of climate change at all levels, including through schools and community outreach activities (through the development of a consistent set of messages)			
	Strengthen public-health planning capacities,			

Negotiating theme/sector	*Adaptation*	*Mitigation*	*Technology*	*Financing*
	including through improved monitoring and evaluation of climate and health impacts Strengthen health systems to provide protection from climate-related risks (for example, promotion of a more forward-looking preventative approach to health protection) Integrate health considerations into decisions on climate change in other key sectors (for example, improved participation of health professionals in key national and international processes)			
Transport: ICAO, IMO, World Bank Group, UNDP, UNEP, GEF, UNCTAD, United Nations Human Settlements Programme (UN-Habitat), World Trade Organization, regional commissions, Department of Economic and Social Affairs		Support the use of cleaner marine fuel and more efficient marine engines Support the use of operational and technical measures, which may include optimal routing design and speed management, as well as optimization of the ship's hull, appendices and propeller design and interaction	Further explore possible alternative fuels for aviation and assess their environmental impacts Facilitate the sharing of information on best practices and voluntary measures to address aviation emissions	Introduce market-based measures, which may include emissions trading Continue to explore the use of global market-based measures to reduce aviation emissions

Negotiating theme/sector	*Adaptation*	*Mitigation*	*Technology*	*Financing*
		Strengthen technical cooperation to support developing countries in meeting their trade needs through access to clean transport		
		Further develop aviation emissions impact assessment tools and facilitate data access and dissemination		
		Continue to develop and update aircraft engine emissions standards, and medium- and long-term goals		
		Promote the use of operational measures that reduce fuel consumption and emissions		
		Foster the modernization and optimization of air traffic management systems		
Disaster risk reduction:				
International Strategy for Disaster Reduction, Office for the Coordination of Humanitarian Affairs, WMO, FAO, UNDP, UNEP, WFP, UNESCO, World Bank Group, United Nations Human Settlements Programme (UN-Habitat),	Better articulate the relations and synergies between the Hyogo Framework for Action 2005-2015 and climate change and the International Strategy for Disaster Reduction			

Negotiating theme/sector	*Adaptation*	*Mitigation*	*Technology*	*Financing*
IMO, UNFPA, ITU, IFAD, UNICEF, United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa	Mainstream and strengthen disaster risk reduction in the United Nations system, at both policy and programme levels Strengthen national capacities in disaster preparedness, with an emphasis on early warning, vulnerability analysis and mapping, and logistics Implement the Tampere Convention on the Provision of Telecommunication Resources for Disaster Integration and Relief Operations relating to emergency telecommunications for disaster reduction and relief Develop a comprehensive approach aimed at reducing vulnerabilities to climate risks by identifying the most critical issues and likely areas of concern (for example, hot-spotting) Improve and make accessible existing disaster reduction tools, methods and information			

Negotiating theme/sector	*Adaptation*	*Mitigation*	*Technology*	*Financing*
	on best practices at the national and local levels			
Population and human settlements:				
United Nations Human Settlements Programme (UN-Habitat), UNFPA, UNESCO, UNDP, Department of Economic and Social Affairs, International Strategy for Disaster Reduction	Construct a comprehensive programme of support aimed at reducing urban poverty, building national and local capacity in integrated urban planning, based on scenarios of future climate change impacts on population movements		Develop and disseminate technologies, standards and codes to support resilient and sustainable infrastructure and construction	
	Support local authorities in assessing risks and vulnerabilities with respect to climate change, particularly those in secondary cities in developing countries, which are at the most risk from climate change, and develop a strategic plan accordingly			
Education:				
UNESCO, UNEP, UNICEF, UNDP, WMO, WHO, FAO, United Nations University	Integrate environmental sustainability, including climate change, into national curricula and into lifelong learning, and mainstream it in teaching and teacher training			
	Develop prototype materials and awareness-raising tools for the benefit of educators, teachers and students worldwide			

Negotiating theme/sector	*Adaptation*	*Mitigation*	*Technology*	*Financing*
	Adapt the work of institutions of higher education towards Education for Sustainable Development (ESD) objectives and national science, technology, engineering and innovations systems to respond to the exigencies of the climate change agenda, including through increasing local, national, and regional capacities for informed decisions about climate change			
	Raise awareness in developing countries that education is a very effective strategy for supporting long-term sustainable and climate-resilient growth			
Public awareness-raising:				
All United Nations system organizations in their respective fields of activity	Provide a venue for engagement with civil society organizations across the world			
	Enhance the role of the media in raising public awareness			
	Improve the use of information and communication technologies to facilitate improved access to data and information in support of timely responses to climate change risks			
	Create incentives to encourage the public to undertake climate change mitigation and adaptation measures			